

Application No.:10/084,810
Docket No.: JCLA4426-D

In the Claims:

15. (currently amended) A method for forming an integrated circuit package that contains an array of metal pegs connected by printed circuit lines, comprising the steps of:

providing a metal substrate that has a first surface and a second surface;

forming a plurality of first electroplate layers on the first surface and forming a plurality of second electroplate layers on the second surface;

forming a mask layer over the first surface to form a die pad region so that the first electroplate layers are positioned around the die pad region;

etching the exposed metal substrate on the first surface using the mask layer and the first electroplate layers as an etching mask to form a die pad and a plurality of first metal pegs;

removing the mask layer;

attaching a silicon die over-onto the die pad, and connecting the die and the first electroplate layers electrically, wherein an area of the die pad region is smaller than the an area of the die;

enclosing the die, the die pad, the first electroplate layers and the first metal pegs above the first surface of the metal substrate with an insulating material;

forming a plurality of circuit line masks on the second surface of the metal substrate; and

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etching the exposed metal substrate on the second surface using the second electroplate layers and the circuit line mask as an etching mask to ~~from~~ form a plurality of second metal pegs and a plurality of printed circuit lines.

16. (original) The method of claim 15, wherein the step of forming the first electroplate layers and the second electroplate layers further includes:

forming a first photoresist layer and a second photoresist layer over the first surface and the second surface of the metal substrate, respectively;

carrying out exposure and development operations with regards to the first and the second photoresist layers, respectively, so that a portion of the first surface and a portion of the second surface are exposed, thus defining a plurality of first metal pegs regions and a plurality of second metal pegs regions; and

conducting an electroplating operation to form first electroplate layers and second electroplate layers over the first metal peg regions and the second metal peg regions, respectively.

17. (original) The method of claim 16, wherein after the step of forming the first electroplate layers and the second electroplate layers, but before the step of forming the mask layer, further includes removing the first photoresist layer.

18. (original) The method of claim 15, wherein the step of forming the first electroplate layers includes electroplating a material chosen from a group consisting of gold, silver, nickel, palladium and a combination of them.

19. (original) The method of claim 15, wherein the step of forming the second electroplate layer includes electroplating gold, silver, nickel, palladium or a combination of them.

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20. (original) The method of claim 15, wherein the step of forming the mask layer includes:

forming a photoresist layer over the first surface of the metal substrate; and exposing the photoresist layer and developing the photoresist layer to form the mask layer.

21. (original) The method of claim 15, wherein the step of forming the circuit line masks includes using a screen printing method.

22. (original) The method of claim 15, wherein after the step of forming the printed circuit lines, further includes forming a plurality of sidewall masks on the sidewalls of the circuit lines.

23. (original) The method of claim 22, wherein the step of forming the sidewall masks includes using a screen printing method.

24. (original) The method of claim 15, wherein after the step of forming the printed circuit lines, further includes attaching a solder ball to the surface of each second electroplate layer.

25. (original) The method of claim 15, wherein after the step of forming the printed circuit lines, further includes attaching a copper ball to the surface of each second electroplate layer.

26. (original) The method of claim 15, wherein after the step of forming the printed circuit lines, further includes smearing solder paste over the surface of each second electroplate layer.

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27. (currently added) The method of claim 15, wherein the die, the die pad, the first electroplate layers and the first metal pegs above the first surface of the metal substrate are enclosed in one molding operation.